

IN THE CLAIMS

1. (*Currently Amended*) A composite squirrel cage rotor, comprising:

a rotating shaft;

a polymer resin body containing chopped fibers and powder of high magnetic permeability, ~~wherein~~ said powder is being uniformly distributed in the polymer resin
5 body;

a plurality of squirrel cage conductor bars positioned axially around and embedded in ~~the outer part of the~~ said polymer resin body ~~and, said conductor bars being~~ formed of material having high electric conductivity;

a plurality of axial slots, wherein said axial slots are formed between said cage
10 squirrel conductor bars; ~~and~~

~~cooling bodies~~ heat pipes inserted into the axial slots for dissipating heat generated in the composite squirrel cage rotor, said heat pipes being sealed and containing isothermal cycling materials therein; and

an inner core having high magnetic permeability, said inner core being disposed
15 between said shaft and said polymer resin body for increasing the magnetic flux density of the composite squirrel cage rotor.

2 - 3. *(Cancelled)*

4. *(Currently Amended)* The rotor according to ~~any of claim 1 to 3~~, wherein said chopped fibers ~~are added to said polymer resin body in order to enhance the mechanical properties such as thermal stability and stiffness of the rotor structures~~ are from approximately 0.5 millimeters to approximately 50 millimeters in length.

5 - 7. *(Cancelled)*

8. *(Currently Amended)* The rotor according to claim ~~[[7]]~~ 1, wherein said isothermal cycling materials are an ammonia, methanol and Freon.

9 - 12. *(Cancelled)*

REMARKS

Claims 1-4 and 7-12 are pending and rejected in this application. Claims 1, 4 and 8 are amended, and claims 2-3, 5-7 and 9-12 are cancelled, hereby.

Claims 1-2, 4 and 10-11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Applicants Admitted Prior Art (AAPA) in view of U.S. Patent No. 5,211,896 (Ward, et al.). Responsive thereto, Applicants point out that claim 1 has been amended, and that claims 2 and 10-11 have been cancelled. Applicants submit that amended claim 1 is now in condition for allowance.

The disclosures of AAPA and Ward, et al., have been thoroughly discussed in the Office Actions and in the responses of Applicants thereto, and therefore will not be reproduced here.

Claim 1 has been amended to recite in part “a polymer resin body containing chopped fibers and powder of high magnetic permeability, said powder being uniformly distributed in the polymer resin body”. (*Emphasis Added*). Applicants submit that such a structure/limitation is not disclosed or suggested by the cited references, alone or in combination.

The rotors disclosed in AAPA and Ward, et al., as previously discussed, do not include a polymer resin body containing chopped fibers and a powder of high magnetic

permeability. Neither of AAPA or Ward, et al., as previously discussed, disclose or suggest a rotor having a polymer resin body that contains or includes chopped fibers. Thus, AAPA and Ward, et al., alone or in combination, fail to disclose or suggest a polymer resin body containing chopped fibers and powder of high magnetic permeability, as recited in part by amended claim 1.

Applicants respectfully reiterate that the body or core of Ward, et al., is constructed primarily of ferromagnetic particles whereas the body/core of the present invention is constructed primarily of a polymer or plastic. There is very little polymer in the body or core of Ward, et al. The amount of polymer by weight of the Ward, et al., body/core is kept below from approximately 5% to below approximately 1% by weight. (*column 5, lines 60-65*). Thus, the core of Ward, et al., is formed primarily from iron particles. The core of Ward, et al., is an iron body/core, not a polymer resin body/core. In contrast, the body/core of the present invention is a polymer resin body having a uniformly-distributed magnetic powder therein. Ward, et al., has a core of coated ferromagnetic particles. Ward, et al., does not have a magnetic powder distributed in a polymer resin body. Thus, Ward, et al., fails to disclose or suggest a polymer resin body containing powder of high magnetic permeability, as recited in part by amended claim 1.

For the foregoing reasons, Applicants submit that the cited references fail to disclose or suggest the subject matter of amended claim 1. Therefore, claim 1, and claims

4 and 8 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Claim 1 has also been amended to recite in part “heat pipes inserted into the axial slots for dissipating heat generated in the composite squirrel cage rotor, said heat pipes being sealed and containing isothermal cycling materials therein”. (*Emphasis Added*).
5 Applicants submit that such a structure/limitation is not disclosed or suggested by the cited references, alone or in combination.

The Examiner states that AAPA shows (in the circle of Fig. 4) that the cooling bodies are retained within the axial slots by the polymer resin body 22. However,
10 Applicants respectfully point out that, as shown in Figs. 3a and 4 of the present specification, the squirrel cage conductor 23 of AAPA is positioned around pipe or body 22. The squirrel cage, which is constructed of copper or aluminum, is provided with a plurality of slots 24 into which heat pipes 25 are inserted. (*see page 3, lines 4-19 of the present specification*). The squirrel cage of AAPA is positioned around the body/pipe.
15 The squirrel cage conductor of AAPA is not partially embedded into a polymer resin body. Further, the cooling bodies of AAPA are disposed within slots formed in the squirrel cage, and not in slots formed in the body/pipe. Thus, AAPA fails to disclose or suggest heat pipes inserted into the axial slots for dissipating heat generated in the composite squirrel cage rotor, the heat pipes being sealed and containing isothermal

cycling materials therein, as recited in part by amended claim 1.

5 Claim 1 also recites in part “a polymer resin body containing . . . powder of high magnetic permeability, said powder being uniformly distributed in the polymer resin body”. (*Emphasis Added*). The core of Ward, et al., is an iron body/core, not a polymer resin body/core. In contrast, the body/core of the present invention is a polymer resin body having a uniformly-distributed magnetic powder therein. Ward, et al., has a core of coated ferromagnetic particles. Ward, et al., does not have a magnetic powder distributed in a polymer resin body. Thus, Ward, et al., fails to disclose or suggest a polymer resin body containing powder of high magnetic permeability, as recited in part by amended
10 claim 1.

Amended claim 1 further recites in part “an inner core having high magnetic permeability . . . disposed between said shaft and said polymer resin body”. (*Emphasis Added*). Applicants submit that such a structure/limitation is not disclosed or suggested by the cited references, alone or in combination.

15 The Examiner refers to Yamada, et al., as disclosing an inner core 15 (Fig. 2) of high magnetic permeability. However, Applicants submit that the laminated core 15 of Yamada, et al., is not disposed between the shaft and a polymer resin body. Rather, the laminated core of Yamada, et al., is disposed between the shaft and a sheet of magnetic plastic material 1. Thus, Yamada, et al., fails to disclose or suggest an inner core of high

magnetic permeability between said shaft and said polymer resin body, as recited in part
by amended claim 1.

For all the foregoing reasons, Applicants submit that the cited references fail to
disclose or suggest the subject matter of amended claim 1. Therefore, claim 1, and claims
4 and 8 depending therefrom, are now in condition for allowance, which is hereby
respectfully requested.

Responsive to the rejection of claims 3, 4 and 12 under 35 U.S.C. §103(a) as
being unpatentable over Applicants Admitted Prior Art (AAPA) in view of Ward, et al.,
and further in view of U.S. Patent No. 3,891,879 (Yamada, et al.), Applicants point out
that claims 3 and 12 have been cancelled, and claim 4 has been amended, hereby.

Amended claim 4 recites in part “said chopped fibers are from approximately 0.5
millimeters to approximately 50 millimeters in length”. (*Emphasis Added*). Chopped
fibers having a length of 0.5 to 50 millimeters may be added to the polymer resin part so
as to improve the mechanical properties thereof, such as thermal stability and stiffness
thereof. (*see page 8, lines 1-4 of the present specification*). Applicants submit that the
cited references, as discussed above, fail to disclose or suggest a polymer resin body
containing chopped fibers, and further fail to disclose or suggest that such chopped fibers
are from approximately 0.5 mm to approximately 50 mm in length. Thus, Applicants
submit that claim 4 is in condition for allowance, which is hereby respectfully requested.

For the foregoing reasons, Applicants submit that the cited references fail to disclose or suggest the subject matter of amended claim 4. Therefore, claim 4 is now in condition for allowance, which is hereby respectfully requested.

In addition to the foregoing, Applicants respectfully point out that claim 4 depends from claim 1, which is in condition for allowance for the reasons given above. Accordingly, Applicants submit that claim 4 is also in condition for allowance, and respectfully request same.

Responsive to the rejection of claims 7-9 under 35 U.S.C. §103(a) as being unpatentable over Applicants Admitted Prior Art (AAPA) in view of Ward, et al., and further in view of U.S. Patent No. 3,715,610 (Brinkman, et al.), Applicants point out that claims 7 and 9 have been cancelled, and that claim 8 has been amended to depend from claim 1 which is now in condition for allowance for the reasons given herein. Accordingly, claim 8 is also now in condition for allowance, which is hereby respectfully requested.

For all the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the pending claims. The pending claims are therefore now in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

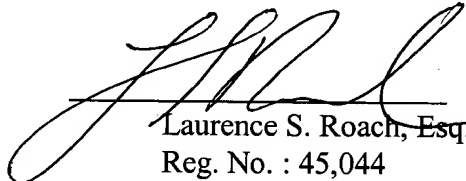
In the event Applicants have overlooked the need for an extension of time, an

additional extension of time, payment of fee, or additional payment of fee, Applicants
hereby conditionally petition therefore and authorize that any charges be made to Deposit
Account No. 10-0223, JAECKLE FLEISCHMANN & MUGEL, LLP.

The Examiner is invited to telephone the undersigned in regard to this
5 Amendment and the above identified application.

Respectfully submitted,

11-JUL-2003
Date


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